REMARKS

Status of the Application

Claims 1-13 have been examined and are all the claims pending in the application.

Claims 1 and 6-13 have been amended for reasons of precision of language. These amendments

merely claim the present invention more accurately and do not narrow the literal scope of the

claims and thus do not implicate estoppel in the application of the doctrine of equivalents.

Preliminary Matter

Applicants thank the Examiner for acknowledging the claim for priority under 35

U.S.C. § 119 and receipt of the certified copy of the priority document. Applicants also thank

the Examiner for initialing and returning the 1449 Form submitted with the Information

Disclosure Statement (IDS) filed on July 11, 2005, indicating that the references cited therein

have been considered.

The Examiner has not indicated whether the drawings have been accepted. Applicants

respectfully request that the Examiner check the proper box on the PTOL-326 (Office Action

Summary) of the next office paper to indicate that the drawings have been accepted.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 1, 2, 4-8, and 11-13

The Examiner has rejected claims 1, 2, 4-8, and 11-13 under 35 U.S.C. § 103(a) as

allegedly being unpatentable over U.S. Patent No. 6,253,185 to Arean et al. (hereinafter

"Arean") in view of U.S. Patent No. 5,654,952 to Suzuki et al. (hereinafter "Suzuki").

Applicants submit that these claims are patentable.

For example, claim 1 recites a masking threshold calculator which calculates an energy level for each frequency band of a frequency domain audio signal, and approximates an energy distribution curve to a distribution pattern of noise threshold levels calculated by a psychoacoustic model. The energy distribution curve connects the calculated energy levels. A quantization noise curve adjuster adjusts a common gain to meet a target bit rate and matches a quantization noise curve to the approximated energy distribution curve while fixing the scalefactor band gain for each frequency band.

Arean is directed to a multiple description (MD) joint source-channel perceptual audio coder (PAC) encoder 100. The encoder 100 includes an analysis filter bank 104 which converts time-domain data into the frequency domain by applying a transform such as a modified discrete cosine transform (MDCT) (col. 11, lines 59-61). Arean discloses that a perceptual model 106 computes a frequency domain threshold of masking for each factor band of the audio signal (col. 12, lines 4-14). A noise allocation element 107 then uses the computed perceptual threshold values to allocate noise to the frequency domain coefficients. Quantization step sizes are adjusted according to the noise level requirements and in order to meet a target bit rate (col. 12, lines 19-33).

On page 3 of the Office Action, the Examiner asserts that Arean discloses the computation of masking thresholds. The Examiner appears to take the position that Arean's threshold values correspond to the claimed distribution pattern of noise threshold levels. However, Arean does not teach or suggest that an energy distribution curve is approximated to the alleged distribution pattern, as required by claim 1. Even if the Examiner takes the position that Arean's threshold values correspond to the claimed energy distribution curve, the limitations of claim 1 would not be met because Arean's threshold values are *computed* (col. 12, lines 4-6).

In contrast, the claimed energy distribution curve is *approximated* to a distribution pattern of noise threshold levels. Likewise, Arean does not teach that a quantization noise curve is matched to the *approximated* energy distribution curve, as required by claim 1.

The Examiner acknowledges that Arean fails to disclose a model in relation to psychoacoustics or energy levels within the signal and cites Suzuki to supply these deficiencies. On page 3 of the Office Action, the Examiner alleges that the combined teachings of Arean and Suzuki would have rendered obvious a masking threshold computation within the frequency domain that realizes the energy of a signal in reference to noise in view of psychoacoustic characteristics. However, Suzuki merely discloses that frequency-domain data are encoded with adaptive bit allocation for each critical band (col. 7, lines 12-14) and that the critical bands are critical bands divided from the audible frequency range in order to take into account psychoacoustic characteristics (col. 7, lines 18-20). Suzuki does not cure the deficiencies of Arean, as Suzuki does not teach or suggest *approximating* an energy distribution curve. Thus, even if the references were to be combined, Arean's perceptual threshold values would be *computed* for each of Suzuki's critical bands. The combination would not teach or suggest *approximating* an energy distribution curve to a distribution pattern of noise threshold levels calculated by the alleged psychoacoustic model, as required by claim 1. Additionally, Suzuki's mere disclosure of the *existence* of energy levels within an audio signal would not have rendered obvious approximating an energy distribution curve which connects these energy levels, as required by claim 1. Likewise, the combination also does not teach or suggest that a quantization noise curve is matched to the *approximated* energy distribution curve, as required by claim 1.

Furthermore, the combination of Arean and Suzuki, as asserted by the Examiner, does not teach or suggest adjusting a common gain to meet a target bit rate. The Examiner appears to take

the position that Arean's quantization step sizes correspond to the claimed common gain. However, Arean teaches that the quantization step sizes are adjusted for *each* factor band to satisfy a target bit rate requirement (col. 12, lines 21-34). Thus, Arean does not teach or suggest adjusting a *common* gain to meet a target bit rate as required by claim 1. Suzuki does not cure these deficiencies.

Because Arean and Suzuki, alone or in combination, do not teach or suggest all of the features of claim 1, Applicants submit that the claim is patentable and respectfully request withdrawal of the rejection. Applicants also submit that claims 2, 4, and 5, being dependent on claim 1, are patentable at least by virtue of their dependency.

Independent claims 6, 7, 11, 12, and 13 recite features analogous to those discussed above regarding claim 1. Thus, Applicants submit that these claims are patentable at least for reasons analogous to those discussed above regarding claim 1. Applicants also submit that claim 8, being dependent on claim 7, is patentable at least by virtue of its dependency.

Claim 3

The Examiner has rejected claim 3 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Arean and Suzuki and further in view of U.S. Patent No. 6,456,963 to Araki (hereinafter "Araki"). Because claim 3 is dependent on claim 1 which has been shown to be patentable, Applicants submit that claim 3 is patentable at least by virtue of its dependency.

Claim 9

The Examiner has rejected claim 9 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Arean and Suzuki and further in view of U.S. Patent No. 5,241,603 to Akagiri (hereinafter "Akagiri"). Because claim 9 is dependent on claim 7 which has been shown to be patentable, Applicants submit that claim 9 is patentable at least by virtue of its dependency.

Claim 10

The Examiner has rejected claim 10 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Arean and Suzuki and further in view of U.S. Patent No. 5,559,900 to Jayant (hereinafter "Jayant"). Because claim 10 is dependent on claim 7 which has been shown to be patentable, Applicants submit that claim 10 is patentable at least by virtue of its dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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Date: August 1, 2007

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